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(54) **LOW TEMPERATURE JOINING OF CERAMIC COMPOSITES**

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(57)

**ABSTRACT**

A method of joining similar or dissimilar ceramic and ceramic composite materials, such as SiC continuous fiber ceramic composites, at relatively low joining temperatures uses a solventless, three component bonding agent effective to promote mechanical bond toughness and elevated temperature strength to operating temperatures of approximately 1200 degrees C. The bonding agent comprises a preceramic precursor, an aluminum bearing powder, such as aluminum alloy powder, and mixtures of aluminum metal or alloy powders with another powder, and and boron powder in selected proportions. The bonding agent is disposed as an interlayer between similar or dissimilar ceramic or cermaic composite materials to be joined and is heated in ambient air or inert atmosphere to a temperature not exceeding about 1200 degrees C. to form a strong and tough bond joint between the materials. The bond joint produced is characterized by a composite joint microstructure having relatively soft, compliant aluminum bearing particulate regions dispersed in a ceramic matrix.

**15 Claims, 2 Drawing Sheets**

